and European Patent Office Application No. 00110086.6.

Please amend page 11, fifth paragraph (lines 20-22) as follows:

-- Fig. 2 is a first perspective view of an embodiment of a transducer assembly suitable for use in the vibration meter of Fig. 1; --

In the Claims

Please cancel claims 1-11 without prejudice or disclaimer of the subject matter recited therein.

Please add new claims 12-53, as follows:

12. (New) A vibration meter for measuring a viscosity of a fluid flowing through a pipe, which vibration meter comprises:

a transducer assembly

with at least one flow tube being inserted into the pipe, said flow tube having a lumen conducting the fluid and said flow tube being clamped at an inlet end and an outlet end so as to be capable of vibrating,

with an electromechanical excitation arrangement being fixed to said at least one flow tube, said excitation arrangement driving said flow tube to oscillate in a bending mode at least partially for producing viscous friction within the fluid, and

with a sensor arrangement, responsive to oscillations of the flow tube, for generating at least one sensor signal, representative of lateral deflections of the flow tube; and

meter electronics

with an excitation circuit which generates an excitation current feeding the excitation arrangement, and

with an evaluating circuit which derives from said at least one sensor signal and from the excitation current a viscosity value representative of the viscosity of the fluid.

13. (New) The vibration meter as claimed in claim 12, wherein the evaluating circuit derives from the at least one sensor signal a density value representative of a density of the fluid and wherein the evaluating circuit also uses said density value for determining the viscosity value.

14. (New) The vibration meter as claimed in claim 12, wherein the evaluating circuit derives from the at least one sensor signal a signal value representative of a lateral deflection of the flow tube and wherein the evaluating circuit uses said signal value representative of a lateral deflection of the flow tube for determining the viscosity value.

15. (New) The vibration meter as claimed in claim 12, wherein the evaluating circuit determines a damping of said deflections of the flow tube by using the at least one sensor signal and the excitation current and wherein the evaluating circuit determines the viscosity value depending on said damping of the deflections of the flow tube.

16. (New) The vibration meter as claimed in claim 12, wherein the evaluating circuit estimates a velocity of a motion of the fluid, said motion causing a viscous friction within said fluid, and wherein the evaluating circuit uses the at least one sensor signal for estimating said velocity.

17. (New) The vibration meter as claimed in claim 16, wherein the evaluating circuit determines the viscosity value depending on said motion being estimated.

18. (New) The vibration meter as claimed in claim 12, wherein the at least one sensor signal is a first sensor signal generated by said sensor arrangement and wherein the sensor arrangement generates a second sensor signal being representative of outlet-side deflections of said flow tube.

19. (New) The vibration meter as claimed in claim 12, wherein the excitation arrangement drives said flow tube to oscillate in a torsional mode simultaneously with said bending mode oscillations.

20. (New) A vibration meter for measuring a viscosity of a fluid flowing through a pipe, which vibration meter comprises:

a transducer assembly

with at least one flow tube being inserted into the pipe, said flow tube having a lumen conducting the fluid and said flow tube being clamped at an inlet end and an outlet end so as to be capable of vibrating,

with an electromechanical excitation arrangement, said excitation arrangement driving said flow tube to oscillate in a bending mode at least partially for producing viscous friction within the fluid, and

with a sensor arrangement, responsive to oscillations of the flow tube, for generating at least one sensor signal, representative of lateral deflections of the flow tube; and

meter electronics

with an excitation circuit which generates an excitation current feeding the excitation arrangement, and

with an evaluating circuit which derives from said at least one sensor signal and from a magnitude of the excitation current a viscosity value representative of the viscosity of the fluid.

21. (New) The vibration meter as claimed in claim 20, wherein the evaluating circuit derives from the at least one sensor signal a density value representative of a density of the fluid and wherein the evaluating circuit also uses said density value for determining the viscosity value.

22. (New) The vibration meter as claimed in claim 20, wherein the evaluating circuit derives from the at least one sensor signal a signal value representative of a lateral deflection of the flow tube and wherein the evaluating circuit uses said signal value representative of a lateral deflection of the flow tube for determining the viscosity value.

23. (New) The vibration meter as claimed in claim 20, wherein the evaluating circuit determines a damping of said deflections of the flow tube by using the at least one sensor signal and the excitation current and wherein the evaluating circuit determines the viscosity value depending on said damping of the deflections of the flow tube.

24. (New) The vibration meter as claimed in claim 20, wherein the evaluating circuit estimates a velocity of a motion of the fluid, said motion causing a viscous friction within said fluid, and wherein the evaluating circuit uses the at least one sensor signal for estimating said velocity.

25. (New) The vibration meter as claimed in claim 24, wherein the evaluating circuit determines the viscosity value depending on said motion being estimated.

26. (New) The vibration meter as claimed in claim 20, wherein the at least one sensor signal is a first sensor signal generated by said sensor arrangement and wherein the sensor arrangement generates a second sensor signal being representative of outlet-side deflections of said flow tube.

27. (New) The vibration meter as claimed in claim 20, wherein the excitation arrangement driving said flow tube to oscillate in a torsional mode simultaneously with said bending mode oscillations.

28. (New) A vibration meter for measuring a viscosity of a fluid flowing through a pipe, which vibration meter comprises:

a transducer assembly

with at least one flow tube being inserted into the pipe, said flow tube having a lumen conducting the fluid and said flow tube being clamped at an inlet end and an outlet end so as to be capable of vibrating,

with an electromechanical excitation arrangement, said excitation arrangement driving said flow tube to oscillate in a bending mode at least partially, and

with a sensor arrangement, responsive to oscillations of the flow tube, for generating at least one sensor signal, representative of lateral deflections of the flow tube; and

meter electronics

with an excitation circuit which generates an excitation current feeding the excitation arrangement, and

with an evaluating circuit which generates a viscosity value representative of the viscosity of the fluid,

wherein the evaluating circuit uses said at least one sensor signal for estimating a velocity of a motion of the fluid, said motion causing a viscous friction within the fluid, and

wherein the evaluating circuit determines the viscosity value depending on said motion being estimated and said excitation current.

29. (New) The vibration meter as claimed in claim 28, wherein the evaluating circuit derives from the at least one sensor signal a density value representative of a density of the fluid and wherein the evaluating circuit also uses said density value for determining the viscosity value.

30. (New) The vibration meter as claimed in claim 28, wherein the evaluating circuit derives from the at least one sensor signal a signal value representative of a lateral deflection of the flow tube and wherein the evaluating circuit uses said signal value representative of a lateral deflection of the flow tube for determining the viscosity value.

31. (New) The vibration meter as claimed in claim 28, wherein the evaluating circuit determines a damping of said deflections of the flow tube by using the at least one sensor signal and the excitation current and wherein the evaluating circuit determines the viscosity value depending on said damping of the deflections of the flow tube.

32. (New) The vibration meter as claimed in claim 28, wherein the evaluating circuit estimates a velocity of a motion of the fluid, said motion causing a viscous friction within said fluid, and wherein the evaluating circuit uses the at least one sensor signal for estimating said velocity.

33. (New) The vibration meter as claimed in claim 32, wherein the evaluating circuit determines the viscosity value depending on said motion being estimated.

34. (New) The vibration meter as claimed in claim 28, wherein the at least one sensor signal is a first sensor signal generated by the sensor arrangement and wherein the sensor arrangement generates a second sensor signal being representative of outlet-side deflections of said flow tube.

35. (New) The vibration meter as claimed in claim 28, wherein the excitation arrangement drives said flow tube to oscillate in a torsional mode simultaneously with said bending mode oscillations.

36. (New) A method of measuring a viscosity of a fluid flowing through a pipe, said method comprising the steps of:

using an electromechanical excitation arrangement for driving a flow tube being inserted into the pipe and conducting said fluid;

feeding said excitation arrangement by an oscillating excitation current and driving said flow tube to vibrate in a bending mode at least partially, said bending mode vibrations causing lateral deflections of said flow tube and said bending mode vibrations producing viscous friction within said fluid;

sensing oscillations of said flow tube by using a sensor arrangement being responsive to lateral oscillations of the flow tube and generating at least one sensor signal being representative of lateral oscillations of the flow tube;

using said at least one sensor signal and said excitation current to

determine a viscosity value representative of the viscosity of the fluid.

37. (New) The method as claimed in claim 36, wherein the step of determining the viscosity value comprises the step of determining from the at least one sensor signal and from the excitation current a damping of deflections of the flow tube.

38. (New) The method as claimed in claim 37, wherein the step of determining the viscosity value comprises the step of correcting the determined damping of deflections of the flow tube by using the correction value.

39. (New) The method as claimed in claim 37, wherein the step of determining the damping of deflections of the flow tube comprises the steps of:

generating an estimate representative of the estimated motion of the fluid; and

dividing the friction value by said estimate to obtain a quotient value depending on the damping of deflections of the flow tube.

40. (New) The method as claimed in claim 36, wherein the step of determining the viscosity value comprises the step of estimating from the at least one sensor signal a velocity of a motion of the fluid, said motion causing said viscous friction within the fluid.

41. (New) The method as claimed in claim 37, wherein the step of determining the damping of deflections of the flow tube comprises the step of obtaining from the excitation current a friction value representative of said viscous friction.

42. (New) The method as claimed in claim 41, wherein the step of determining the damping of deflections of the flow tube comprises the steps of:

generating an estimate representative of the estimated motion of the fluid; and

dividing the friction value by said estimate to obtain a quotient value depending on the damping of deflections of the flow tube.

43. (New) The method as claimed in claim 36, wherein the step of determining the viscosity value further comprises the steps of:

determining a density of the fluid for generating a density value being representative of said density of the fluid; and

using said density value for determining said viscosity to be measured.

44. (New) The method as claimed in claim 43, wherein the step of determining the viscosity value comprises the step of deriving from the density value and the excitation frequency value a correction value depending on the density of the fluid and the excitation frequency.

45. (New) The method as claimed in claim 44, wherein the step of determining the viscosity value comprises the step of correcting the determined damping of deflections of the flow tube by using the correction value.

46. (New) The method as claimed in claim 43, wherein the step of determining the density of the fluid comprises the step of deriving the density value from said at least one sensor signal.

47. (New) The method as claimed in claim 36, wherein the excitation current has an excitation frequency corresponding to a mechanical resonance frequency of the flow tube.

48. (New) The method as claimed in claim 47, wherein the step of determining the viscosity value comprises the step of generating an excitation frequency value representative of said excitation frequency.

49. (New) The method as claimed in claim 48, wherein the step of determining the viscosity value comprises the step of deriving from the density value and the excitation frequency value a correction value depending on the density of the fluid and the excitation frequency.

50. (New) The method as claimed in claim 49, wherein the step of determining the viscosity value comprises the step of correcting the determined damping of deflections of the flow tube by using the correction value.

51. (New) The method as claimed in claim 47, wherein the step of feeding the excitation arrangement by the excitation current comprises the step of adjusting the excitation frequency to be equal to said mechanical resonance frequency of the flow tube.

52. (New) The method as claimed in claim 36, wherein the step of sensing oscillations of said flow tube comprises the step of sensing an inlet-side lateral deflection of the flow tube.

53. (New) The method as claimed in claim 36, wherein the step of sensing oscillations of said flow tube comprises the step of sensing an outlet-side lateral deflection of the flow tube.

54. (New) The method as claimed in claim 36, wherein the step of determining said viscosity value comprises the step of deriving from the at least one sensor signal a signal value representative of a lateral deflection of the flow tube.